

Application Serial No. 10/714,164

AMENDMENT TO THE SPECIFICATION

Please replace pending paragraph 19 beginning on page 5, with the following amended paragraph:

[0019] Referring to Figure 1, in a typical electrostatographic reproducing apparatus, a light image of an original to be copied is recorded in the form of an electrostatic latent image upon a photosensitive member and the latent image is subsequently rendered visible by the application of electroscopic thermoplastic resin particles which are commonly referred to as toner. Specifically, photoreceptor 10 is charged on its surface by means of a charger 12 to which a voltage has been supplied from power supply 11. The photoreceptor 10 is then imagewise exposed to light from an optical system or an image input apparatus 13, such as a laser and light emitting diode, to form an electrostatic latent image thereon. Generally, the electrostatic latent image is developed by bringing a developer mixture from developer station 14 into contact therewith. Shown in Figure 1 is donor roller 40. Development can be affected by use of a magnetic brush, powder cloud, or other known development process. A dry developer mixture usually comprises carrier granules having toner particles adhering triboelectrically thereto. Toner particles are attracted from the carrier granules to the latent image forming a toner powder image thereon. Alternatively, a liquid developer material may be employed, which includes a liquid carrier having toner particles dispersed therein.

Please replace pending paragraphs 23 through 28 beginning on page 6, with the following amended paragraphs:

[0023] Referring now to Figure 2, in an embodiment of the invention, developer unit 14 develops the latent image recorded on the photoconductive surface 10. Preferably, developer unit 14 includes donor roller 40 and electrode member or members 42. Electrode members 42 are electrically biased relative to donor roll 40 to detach toner therefrom so as to form a toner powder cloud in the gap between the donor roll 40 and photoconductive surface 10. The latent image attracts toner particles from the toner powder cloud forming a toner powder image thereon. Donor roller 40 is mounted, at least partially, in the chamber 76 of developer housing 44. The chamber 76 in developer housing 44 stores a supply of developer material which is a two component developer material of at least carrier granules

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having toner particles adhering triboelectrically thereto. A magnetic roller 46 disposed interior of the chamber 76 of housing 44 conveys the developer material to the donor roller 40. The magnetic roller 46 is electrically biased relative to the donor roller 40 so that the toner particles are attracted from the magnetic roller 46 to the donor roller 40.

[0024] The donor roller 40 can be rotated in either the 'with' or 'against' direction relative to the direction of motion of photoreceptor 10. In Figure 2, donor roller 40 is shown rotating in the direction of arrow 68. Similarly, the magnetic roller 46 can be rotated in either the 'with' or 'against' direction relative to the direction of motion of photoreceptor belt 10. In Figure 2, magnetic roller 46 is shown rotating in the direction of arrow 92. Photoreceptor 10 moves in the direction of arrow 46 45.

[0025] A pair of electrode members 42 are shown extending in a direction substantially parallel to the longitudinal axis of the donor roller 40. The electrode members 42 are made from one or more thin (i.e., 50 to 100 μm in diameter) stainless steel or tungsten electrode members 42 which are closely spaced from donor roller 40. The distance between the electrode members and the donor roller 40 is from about 5 to about 35 μm , or about 10 to about 25 μm or the thickness of the toner layer on the donor roll. The electrode members 42 are self-spaced from the donor roller 40 by the thickness of the toner on the donor roller 40.

[0026] As illustrated in Figure 2, an alternating electrical bias is applied to the electrode members 42 by an AC voltage source 78. The applied AC establishes an alternating electrostatic field between the electrode members 42 and the donor roller 40 is effective in detaching toner from the ~~photoconductive member of the~~ donor roller 40 and forming a toner cloud about the electrode members 42, the height of the cloud being such as not to be substantially in contact with the photoreceptor 10. The magnitude of the AC voltage is relatively low and is in the order of 200 to 500 volts peak at a frequency ranging from about 9 kHz to about 15 kHz. A DC bias supply 80 which applies approximately 300 volts to donor roller 40 establishes an electrostatic field between photoconductive member 10 and donor roller 40 for attracting the detached toner particles from the cloud surrounding the electrode members 42 to the latent image recorded on the photoconductive member. At a spacing ranging from about 10 μm to about 40 μm between the electrode members 42 and donor

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roller 40, an applied voltage of 200 to 500 volts produces a relatively large electrostatic field without risk of air breakdown. A DC bias supply 84 which applies approximately 100 volts to magnetic roller 46 establishes an electrostatic field between magnetic roller 46 and donor roller 40 so that an electrostatic field is established between the donor roller 40 and the magnetic roller 46 which causes toner particles to be attracted from.

[0027] In an alternative embodiment of the present invention, one component developer material consisting of toner without carrier may be used. In this configuration, the magnetic roller 46 is not present in the developer housing 44. This embodiment is described in more detail in U.S. Patent 4,868,600, the disclosure of which is hereby incorporated by reference in its entirety.

[0028] The donor member of the present invention may be in the form of a donor roller 40 as depicted in Figure 2 and 3, or in another known configuration. As shown in Figure 3, the donor member 40 includes a substrate 41 which may comprise metal substrates such as, for example, copper, aluminum, nickel, and the like metals, plastics such as, for example, polyesters, polyimides, polyamides, and the like, glass and like substrates, which may be optionally coated with thin metal films, and a coating 43 including a blend of ceramic and metal.

Please replace pending paragraphs 32 and 33 on page 9 with the following amended paragraphs:

[0032] In an embodiment, the outer donor member layer 43 comprises a blend of molybdenum and alumina.

[0033] In embodiments, the outer donor member coating 43 has a resistivity of from about 103 to about 1010, or from about 106 to about 109 ohms-cm, or about 108 ohms-cm.

Please replace pending paragraph 39 with the following amended paragraph:

[0039] The following Examples further define and describe embodiments of the present invention. Unless otherwise indicated, all parts and percentages are by weight.